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The Flora of Banda Oriental.

BY W. E. SAFFORD, U. S. N.

After a passage of sixty-six days from New York, the "Vandalia" came to anchor in the roadstead of Montevideo, about two miles from the city.

From our anchorage we could see a compact mass of flat-roofed houses rising gradually from the water's edge and crowned by a large cathedral with two spires and a dome of glazed tiles. To the west of the city was a little harbor crowded with ships of all nationalities, beyond which rose the " mount," or *cerro*, which gives to the city its name. To the eastward we could see a broad expanse of pasture land, dotted with herds of cattle and sheep, and in the distance a number of trees darkly outlined against the horizon. All of these, I afterwards found, were introduced species: Eucalypti and Acacias from Australia, tall, slender "Lombardy" poplars, and weeping willows. Very few of the trees indigenous to the region are suitable for shade trees. They are mostly of small size, and their leaves are of such a nature as to offer but little protection from the sun, narrow and coriaceous, and thus admirably adapted to resist the violent winds which blow almost continually over the unprotected plains.

It was a great pleasure to get on shore after having been confined so long on board ship. Spring had just begun. The broad, flat country around Montevideo was covered by a rich carpet of tender grass spangled with flowers. The pretty quintas were surrounded by bouquets of blooming quince and cherry and apple trees, contrasting strangely with the dark, glossy-leaved limes and oranges and the feathery palm trees by their side. For Montevideo, although in a latitude corresponding nearly to the southern boundary of Tennessee, has a very mild climate. In the summer time the temperature seldom reaches above ninety degrees Fahrenheit, and in winter frost is of rare occurrence; so that Fuchsias, Heliotropes and beautiful Cape Jasmines grow to an enormous size.

To those who have read Darwin's Journal, the Banda Oriental, or, as it is now called, the Republica Oriental, must have almost classic interest. I was eager to wander over the *campo* of whose flora Darwin gives us but a tantalizing glimpse when he mentions the brilliant scarlet Verbenas and the daisy-like flowers, in his description of the country around Maldonado, a region to the eastward of Montevideo. I wished to see the *Ombu* trees which he describes as so characteristic of the Pampas, and the thistles which grow to such an enormous size as to afford hiding-places for robbers. All of these I saw during our stay at Montevideo, and I was able to make almost a complete collection of the spring plants and trees of the region, nearly all of which were determined for me by Don José Arechavaleta, of Montevideo, who has in his possession the Gibert collection of Montevidean plants. I am also greatly indebted to this gentleman for several delightful botanical excursions to the interior of the country in the province of Comelones, and for his kindness in allowing me access to his herbarium.

I wish to remark here, that although Montevideo has many excellent bookstores, in which I found the works of nearly all the modern writers on natural science, I failed to discover a single book which treated of the natural history of the Banda Oriental or of South America, except translations in French and Spanish of Darwin's Journal. I was informed by a gentleman in Montevideo that the accuracy with which this work describes the country is remarkable, and I found that nearly every well-educated man whom I met was familiar with it.

The only thing which I could find bearing upon the botany the region was a catalogue of the Gibert collection of plants in the Kew Herbarium, a copy of which was kindly given me by Mr. Arechavaleta. This gentleman informed me that no manual of the Uruguayan flora has ever been published, and that, in fact, certain genera and even families of plants of the region have not yet been worked up. Among them are the Bromeliaceæ, the Orchidaceæ, the many species of *Plantago*, *Oxalis* and of *Sisyrinchium*. He has been paying special attention for a number of years to the Compositæ, has collected and described many fresh-water algæ, and is now engaged in working up the Gramineæ.

In the immediate vicinity of Montevideo I noticed many hedges of Agave, cactus and a species of dwarf *Pandanus*, enclosing fresh-looking vegetable gardens and orchards of quinces, figs and oranges. In many places these hedges are being extirpated, and replaced by wire fences. The wire used is not armed with the dangerous barbs so common in the United States. The posts are either of imported timber or they are made of the trunks of the Ñomdubay tree, one of the Leguminoseæ, which seems to have the same properties as our locusts (Robiniæ) when buried in the ground.

One of my first tramps was to the eastward of the city in the direction of Punta Carretas. Not a tree or shrub was to be seen. The rich green sward was dotted by whitish clumps of thistles and the wild cardoon and bright patches of pink and yellow oxalis. Many of the flowers common in our gardens were here growing indigenously—beautiful Verbenas, white and crimson Petunias, pretty purple Mallows and spiny Solanums with large conspicuous flowers. I collected a number of species of *Sisyrinchium*, or blue-eyed grass, varying in height from two feet to delicate little plants of a few inches only, with almost microscopic flowers. These were especially interesting to me, as we have but one Sisyrinchium (*S. angustifolium*) in the northeastern United States.

Among the other plants in the fields were large woolly-leaved Senecios, with conspicuous yellow flowers; a little *Antennaria* or *Gnaphalium* like the common plantain-leaved "everlasting" of our fields; an indigenous clover with tiny leaves and loose heads of pretty tawny flowers, besides many species of *Medicago*, which have probably been introduced. Among the daisy-like composites were a dwarf *Erigeron* and a species of *Anthemis* with pretty white flowers, growing in large patches. It may be this plant which Darwin, in his Journal, says reminded him of the daisies of the English fields.

The rocks of the sea coast were devoid of any vestiges of Algæ. This, I think, may be explained by the great amount of mud held in suspension by the water, the irregularity of the tides, which frequently leave the rocks exposed for a long period of time, and the variability in the saltness of the water.

In the sand of the beach I found a little African composite with fleshy leaves and small rayless heads of flowers, the *Cotula coronopifolia*, L., now so extensively spread throughout the world.

On my way back to the city I stopped to gather flowers by the roadside, under hedges and in the neighboring fields. A pretty little fumitory (*Fumaria capreolata*, L.) climbed along a hedge, under the shade of which a simply pinnate fern (*Blechnum australe*, L.) grew in abundance.

In the fields near the road, and in waste places, I was surprised to find many familiar plants, which grow in similar situations in the United States. Most of these were European species which are adventitious with us or which have escaped from cultivation. The bright little scarlet pimpernel (*Anagallis arvensis*) greeted me as an old friend. With it were associated the common shepherds-purse, *Samolus Valerandi*, *Cerastium vulgatum*, *Sagina procumbens*, *Lepigonum medium*, Fries., *Spergula arvensis*, *Portulaca oleracea*, several species of *Medicago*, *Centunculus minimus*, *Veronica agrestis* and *Veronica arvensis*. In an old vacant lot I found a rank growth of weeds, some of which have established themselves in many parts of the world. Among them were several species of *Chenopodium* and *Rumex*, the common bur-dock, *Datura Stramonium*, *Marrubium vulgare*, the deadly night-shade, *Stellaria media*, Herb Robert, wild carrots and radishes, *Conium maculatum*, *Maruta Cotula*, DC., chicory, the sow-thistle,*Plantago major*, and a tangled mass of *GaliumAparine*, *Mikania scandens* and the common bird-weed of the fields.

In looking over Don José's herbarium I was much impressed with the scarcity of Ranunculaceæ. The whole order was there represented by nine species—two species of *Clematis*, one *Anemone*, two *Ranunculi*, one *Aphanostemma*, and three species of *Casalea*. In the United States and in Europe the Ranunculaceæ comprise some of the most beautiful and characteristic species of the flora; in the Banda Oriental none of them are conspicuous.

I had the pleasure of going on two botanical excursions with Don José—to Independencia, or La Paz, where I made almost a complete collection of the spring flowers of the fields, and to an estancia near the town of Santa Lucia, where I collected specimens of many of the indigenous trees of the country. Both of these localities are in the Province of Comelones, and are situated on the Central Uruguayan Railroad. From the car windows we could see large fields of wheat, well kept vineyards, and orchards of peaches; and from time to time we passed large Ombu trees. It may be interesting to note that the Ombu (*Phytolacca dioica*) belongs to the same genus as the common poke-weed (*Phytolacca decandra*). It is a handsome tree with dense foliage, large dark-green elliptical leaves, and a swollen buttressed trunk. It is said that its berries are sometimes used for coloring wine. Its wood is soft and almost of herbaceous consistency, so that it is unfit for purposes of construction, or even for burning. Its vitality is great; I saw several young trees growing from the margins of stumps of old ones which had been cut down. In describing to me the softness of the wood, one of my acquaintances in Montevideo said: "You could cut an Ombu down with a knife, as though it were of butter."

At Independencia the railroad embankments were covered with patches of purple Verbenas, yellow Senecios, blue Lupines, and the daisy-like *Anthemis arvensis*. We saw also quantities of a little European *Silene* (*S. Gallica*, L.) and the common *Echium violaceum*. In a little valley near an outcrop of Syenite, I collected a delicate "golden" fern (*Gymnogramme chærophylla*, Desv.), and the rank *Blechnum australe*, L. The rocks were covered with mosses, among which were a *Grimmia* and a *Campylopus*. Near by, in a damp place, I found *Ranunculus muricatus*, an odd-looking *Plantago*, and two or three species of *Oxalis*, one of which had handsome yellow flowers and thick substantial hairy leaves growing on a long trailing stem.

Near the Arroya de las Piedras, I gathered some beautiful grasses, among which were *Melica papilionacea*, L., bearing large pendant glumes like May-flies clinging to the stem; *Calotheca elegans*, Beauv.; and the tiny introduced *Briza minor*, L. Suddenly we came upon a patch of dazzling scarlet which seemed to be intensified by the bright green of the grass around it. It was the *Verbena chamædrifolia*, Juss. (= *V. Melindres*, Gill.), a plant which gave me more pleasure, I think, than anything else I have ever collected. I collected the only indigenous Anemone (*A. triternata*, Vahl.) thus far known from the region. It looked somewhat like a diminutive *A. Virginiana*, L., and had nearly gone out of bloom. It was associated with a tiny umbelliferous plant with a bulbous root deep under the surface, somewhat like the *Erigenia bulbosa* of the middle United States. This little plant is probably the earliest of the region to bloom (excepting the chick-weeds and other plants which never cease blooming). For the Republica Oriental has a well-marked spring season, however mild its winters may be.

(*To be continued.*)

Another Florida Fern.

On the south bank of the Miami River, a short distance below the rapids, I collected, on the first of March of this year, a fern which appears to be *Nephrolepis acuta*, Presl., not reported as having been found before in the United States. It was very abundant at that one place, though not seen elsewhere. Fruit-bearing fronds were rare at that time, and the few that were obtained were past their prime maturity. However, a few sori with indusia in good condition remain. Specimens were submitted to Prof. Eaton, and he says: "I have very little doubt that your fern is really *Nephrolepis acuta*, a somewhat rusty-pubescent variety." ISAAC HOLDEN.

[Mr. Holden's specimens were compared with those of Fendler's Plants of Trinidad, No. 55; Wright's Plantæ Cubenses, No. 1,011, and Hayes' Filices Centrali-Americanæ, No. 15, with all of which they agree in having almost circular indusia, subpeltate in the attachment.—ED.]

Index to Recent American Botanical Literature.

Aquatic Plants of the vicinity of San Diego.—C. R. Orcutt. (West. Am. Sci., iii., pp. 123-126.)

Botany of California and Parts Adjacent.—Studies in the.—VI. Edward Lee Greene. (Bull. Cal. Acad. Sci., ii., pp. 377-418; reprinted.)

Professor Greene's sixth contribution to the Botany of our West Coast, opens with "Notes on the Botany of Santa Cruz Island," giving a most interesting account of the character of the Flora and its relations to that of the other islands of our "Southwestern Archipelago," and of the mainland. He suggests that many of the rarer species of Southern California have originated on these islands and they may have formerly been